REMARKS

In view of the above amendments and following remarks, reconsideration and further examination are requested.

The specification and abstract have been reviewed and revised to make editorial changes thereto and generally improve the form thereof, and a substitute specification and abstract are provided. No new matter has been added by the substitute specification and abstract. Also, enclosed is a "marked-up" copy of the original specification and abstract to show changes that have been incorporated into the substitute specification and abstract. The attached pages are captioned *"Version with Markings to Show Changes Made."*

On page 2 of the Office Action, the Examiner expressed that Figures 10 and 11 should be designated by a legend such as --Prior Art--. Accordingly, provided herewith are proposed drawing amendments, and formal drawings, for Figures 10 and 11 which designate these figures as --Prior Art--.

The instant invention pertains to a vibration generating device that includes an eccentric load portion, two side walls extending from the eccentric load portion, a groove defined between the two side walls, and a motor shaft positioned within the groove. The two side walls are caulked to deform portions of the side walls into the groove such that the deformed portions integrally connect the motor shaft to the eccentric load portion. Such a vibration generating device is generally known in the art as depicted in Figures 10 and 11; however, this known vibration generating device suffers from drawbacks as follows.

Initially, because the portion of the side walls that are caulked corresponds to an entire width of a top end surface of the side walls, a high caulking force is required. Depending upon the material of the eccentric load portion, the use of a high caulking force can render the eccentric load portion brittle, whereby cracks are likely to be generated in the side walls.

Additionally, because an entire width of the top end surface of the side walls is caulked, and because the caulking operation is performed when the motor shaft is positioned within the groove, the motor shaft provides a resistive force to the caulking of the side walls such that much of the deformation of the side walls results at an outer peripheral portion of the side walls, as opposed to into the groove. This results in the pull-out strength of the vibration generating device not being sufficiently high.

Applicant has addressed and resolved these drawbacks by developing a unique vibration generating device. Specifically, in accordance with a first aspect of the invention, with reference to Figure 3 for example, the caulking operation does not result in deformation of the end surface 14a across its entire width, but rather, after the caulking operation is performed to result in caulked portion 14c, a portion 14b of the end surface 14a remains for the entire length of the end surface 14a.

Because less material is caulked, a lower caulking force is required such that the problem of developing cracks in the side walls associated with the conventional vibration generating device as shown in Figures 10 and 11 is not realized. Also, because most of the caulked material is deformed into the groove, the pull-out strength of the vibration generating device in accordance with the instant invention is higher than that associated with the conventional vibration generating device as depicted in

Figures 10 and 11. Independent claim 9 is believed to be representative of this aspect of the invention.

In accordance with a second aspect of the invention, the groove includes a portion that surrounds the motor shaft for at least 180° of the motor shaft, and an open end of the groove has a width that is from 70% to 95% of the diameter of the motor shaft. This is illustrated for example in Figure 4. Such a configuration of the groove results in a secure joining of the motor shaft to the eccentric load portion using an even smaller caulking force. Independent claim 21 is believed to be representative of this aspect of the invention.

The Examiner rejected claims 1, 3, 4 and 5 under 35 U.S.C. 103(a) as being unpatentable over JP '549 in view of JP '949. And, the Examiner rejected claims 2, 6, 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over JP '549 in view of JP '170 and JP '949. These rejections are respectfully traversed in part, and the references relied upon by the Examiner are not applicable with regard to the newly added claims for the following reasons.

As expressed above, independent claim 9 is representative of the first aspect of the invention in which the entire width of the end surface of the side wall is not deformed during the caulking operation. This inventive feature is clearly brought out in claim 9, which recites a vibration generating device comprising an eccentric load portion and two side walls extending from the eccentric load portion. Each of the two side walls has an inner surface, an outer surface, an end surface, having first and second ends, innterconnecting the inner surface and outer surface, and

> a caulked portion extending...from a location that is between said inner surface and said outer surface...such that along an intersection of said end surface and said

> outer surface said end surface is continuous from said first end to said second end.

While the caulked portion as recited in claim 9 can arguably be read on parts 7, 8 of JP '549, claim 9 recites additional limitations that are not taught or suggested by JP '549, JP '170 and JP '949 either taken alone or in combination.

In this regard, claim 9 recites a positional relationship between the motor shaft, the caulked portion and the end surface which is not taught or suggested by JP '549. Specifically, claim 9 recites that the inner surfaces of the two side walls define a groove having a bottom, with the end surface being positioned at a level relative to this bottom, and with

> said caulked portion being positioned at a level that is closer to the bottom of said groove than is the level at which end surface is positioned...and a motor shaft positioned within said groove between said caulked portion... and the bottom of said groove such that said motor shaft is in its entirety between the bottom of said groove and said end surface.

Accordingly, claim 9 requires that the caulked portion is between the bottom of the groove and the end surface, and that the motor shaft is also between the bottom of the groove and the end surface. Such a positional relationship is not taught or suggested by JP '549.

In this regard, as shown in Figure 2 of JP '549, the portions 8 resulting from the deformation process of JP '549 are not at a level that is beneath the level of the end surface 5, but rather, as shown in Figure 2 portions 8 and end surface 5 are at the same level, or portions 8 are at a level slightly above end surface 5. Similarly, the

rotary shaft 3 is also at the same level as the end surface 5, or slightly thereabove, and thus is not beneath the level of end surface 5.

Accordingly, claim 9 is not anticipated by JP '549.

Additionally, any combination of JP '549 with JP '170 or JP '949 would not result in the invention as recited in claim 9. Specifically, JP '170 merely discloses the conventional vibration generating device as shown in Figures 10 and 11 of the instant application, and therefore suffers from the same drawbacks as discussed with regard to the vibration generating device of Figures 10 and 11. And, JP '949 also does not disclose or suggest the positional relationship as recited in claim 9. Accordingly, any combination of JP '549, JP '170 and JP '949 would not result in the invention as recited in claim 9.

Also as expressed above, independent claim 21 is representative of the second aspect of the invention in which the groove is specifically sized relative to the motor shaft. Specifically, claim 21 recites a vibration generating device comprising an eccentric load portion, two side walls that define a groove having an open end therebetween, and a motor shaft positioned within the groove, wherein

> said motor shaft has a diameter...and...said groove includes a portion that surrounds said motor shaft for at least 180° of said motor shaft and... said open end of said groove has a width that is from 70% to 95% of the diameter of said motor shaft.

These features are not taught or suggested by any references relied upon by the Examiner.

In this regard, it is noted that former claim 5 generally includes the subject matter as now recited in independent claim 21, and accordingly, the rejection of claim 5 will be addressed as it pertains to claim 21.

With regard to former claim 5, the Examiner has not stated that any of the references relied upon disclose or suggest the size relationship between the motor shaft and the groove, but rather has taken the position that

> where the range of article sizes disclosed in the prior art envelops the recited range, and there is no showing of criticality of the recited range, such recited range would have been obvious to one having ordinary skill in the art.

Also, the Examiner has taken the position that

> a change in size of a prior art device is a design consideration within the skill of the art.

These positions taken by the Examiner are respectfully traversed.

In this regard, it is firstly pointed out that none of the references relied upon by the Examiner demonstrate that the ranges as recited in claim 9 are "enveloped" by sizes or ranges in the prior art. Additionally, the size relationship between the motor shaft and the groove is significant in that it provides a sufficient pull-out strength for the vibration generating device while employing a smaller caulking force. Please see the complete paragraph on page 19 and the complete paragraph on page 25 of the original specification. Thus, claim 21 is not merely reciting a change in size of a prior art device, but is rather reciting a specific size relationship between two components of a device which leads to improved results.

Accordingly, the size relationship between the motor shaft and the groove is not merely a design consideration, but is of patentable significance in that it ensures a secure fixing of the motor shaft to the eccentric load portion while employing a small caulking force. Thus, claim 21 is allowable over the references relied upon by the Examiner either taken alone or in combination.

Additionally, claims 25-28 have been added to more specifically define the unique size relationship between the motor shaft and the groove, and accordingly, each of claims 25-28 is patentable in its own right.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and an early Notice of Allowance is earnestly solicited.

If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicant's undersigned representative by telephone to resolve such issues.

Respectfully submitted,

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